

21st Century Skills and Academic Performance of Grade Six Pupils

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Abstract

This study examined the level of 21st century skills and the academic performance of Grade Six pupils in selected public elementary schools in Binangonan District during the School Year 2025–2026. The research specifically aimed to determine the relationship between pupils' 21st century skills and their academic performance, as well as to analyze the influence of selected demographic variables. The study employed a descriptive survey research design and documentary analysis. A total of 319 respondents were selected from 1,580 Grade Six pupils using Slovin's formula and simple random sampling. The respondents were described in terms of sex, sibling position, family size, monthly income, and parents' educational attainment and occupation. Data on 21st century skills were gathered through a researcher-made questionnaire covering information, media and technology skills, learning and innovation skills, communication skills, and life and career skills. Academic performance was determined through the analysis of pupils' average grades for the first and second quarters. Findings revealed that most respondents were female, first or second born, and came from families with more than two children and a monthly income of at least PHP 15,000. The majority of parents were college undergraduates or graduates and were either employed or self-employed. The pupils demonstrated a high level of 21st century skills across all domains assessed. Among the demographic variables, only fathers' educational attainment showed a significant influence on pupils' 21st century skills. The overall academic performance of the respondents was rated as Very Satisfactory. Furthermore, a significant relationship was found between the level of 21st century skills and academic performance, indicating that higher skills correspond to better academic outcomes. The study concludes that 21st century skills play a vital role in enhancing pupils' academic performance, while fathers' educational attainment contributes to skill development. It is recommended that schools implement programs and activities that strengthen 21st century skills to further improve learners' academic outcomes and future readiness.

Keywords: 21st century skills, academic performance, Grade Six pupils, descriptive survey, Binangonan District, educational outcomes, learner skills, basic education

1. Introduction

Education plays a vital role in human development as it fosters intellectual growth, personal enrichment, and societal progress. It serves not only as a means of acquiring knowledge but also as a lifelong process of learning, discovery, and self-improvement. Through education, individuals develop essential knowledge, skills, and competencies that enable them to think critically, solve problems creatively, and communicate effectively. Moreover, education is a key driver of economic growth and national development, empowering individuals to become productive and skilled members of society.

In the Philippines, the importance of education is enshrined in the 1987 Philippine Constitution under Article XIV, Section 1, which mandates that the State shall protect and promote the right of all citizens to quality education at all levels and make such education accessible to all. In line with this constitutional provision, the Department of Education (DepEd) continuously implements programs aimed at improving the quality of basic education and ensuring that learners are equipped with the necessary competencies for lifelong success.

With the country's vision aligned with ASEAN and global standards, the Philippine educational system emphasizes the development of learners' 21st century skills. These skills are essential in preparing students to meet the demands of a rapidly changing world. As stated in DepEd Order No. 010, s. 2024, also known as the Policy Guidelines on the Implementation of the MATATAG Curriculum, the curriculum is designed to strengthen foundational literacy and numeracy while integrating 21st century skills such as critical thinking, creativity, collaboration, communication, and digital literacy. The MATATAG Curriculum aims to produce learners who are future-ready, globally competitive, and capable of adapting to evolving challenges. Research indicates that Filipino learners continue to face challenges in academic performance, as reflected in international assessments such as the Program for International Student Assessment (PISA)

2023, where students performed below global standards in Mathematics, Reading, and Science. This situation highlights the need to further strengthen the development of 21st century skills, as these competencies are believed to influence academic performance and overall learning outcomes.

Studies suggest that 21st century skills—particularly in the domains of information, media, and technology; learning and innovation; communication; and life and career skills—are essential in shaping students' academic success. However, observations in the classroom reveal that many learners still struggle with critical thinking, active participation, and independent problem-solving. Some students rely heavily on technology for non-academic purposes, lack communication skills, and show limited interest in setting academic and personal goals.

Foreign and local studies consistently highlight the significance of 21st century skills in relation to academic performance. The study of Akman (2023) found a significant relationship between 21st century skills and academic performance in mathematics and science among high school students. Similarly, Onur (2021) reported a positive and significant correlation between students' 21st century learning skills and their educational technology competencies, suggesting that these skills enhance learning outcomes. Huang (2022) demonstrated that integrating STEM-based programs improves students' creative thinking, collaboration, and perseverance. Meanwhile, Oral (2023) emphasized that demographic factors such as parental education can influence certain dimensions of 21st century skills, although most variables were found to have no significant effect. Local studies further support these findings. Abaniel (2021) revealed that inquiry-based learning significantly improves students' 21st century skills and learning attitudes. Varona (2022) reported that students possess a high level of 21st century skills and academic performance, although not all skill domains significantly relate to performance. Tuazon (2022) also found that teaching practices aligned with 21st century skills significantly influence students' academic performance, while Legaspino (2024) highlighted that these skills significantly impact learning outcomes in Mathematics. Moreover, Cortez (2024) emphasized the role of digital literacy and 21st century skills in enhancing educational performance, although some variables showed no significant relationships. Collectively, these studies confirm that 21st century skills are essential factors in improving students' academic performance and learning outcomes.

Despite the growing body of literature on 21st century skills, several gaps remain evident. First, most existing studies focus on secondary, senior high school, or tertiary-level students, with limited attention given to Grade Six pupils in the Philippine context. Second, many studies examine specific skill domains or subject-specific performance, such as Mathematics or Science, rather than overall academic performance across subjects. Additionally, while previous research highlights the relationship between 21st century skills and academic performance, there is a lack of localized studies in selected public elementary schools in Binangonan District. Furthermore, limited research explores the influence of demographic variables—such as sibling position, family size, and parents' characteristics—on pupils' 21st century skills.

Given these gaps, there is a need to conduct a study that examines the level of 21st century skills of Grade Six pupils in relation to their academic performance within the local context. This study aims to contribute to the existing body of knowledge by providing empirical evidence that may guide educators, school administrators, and policymakers in strengthening instructional practices and improving learner outcomes in basic education

2. Materials and methods

2.1 Research Design

The study applied the descriptive method of research specifically, the survey design with documentary analysis.

2.2 Research Setting

The study was conducted in selected public elementary schools in Binangonan District, Schools Division Office of Rizal. These schools include Binangonan Elementary School, Calumpang Elementary School, Casimiro Ynares Elementary School, Macamot Elementary School, Mahabang Parang Elementary School and Tatala Elementary School. These schools offer complete elementary education from the kindergarten level up to grade six level.

2.3 Respondents

The respondents of the study were selected grade six pupils in selected public elementary schools in Binangonan District. The sample size was determined utilizing Slovin's formula. Hence, out of 1580 grade six pupils, 319 were considered. They were chosen using simple random sampling technique. They were described in terms of sex, sibling position, number of children in the family, monthly family income, parents' educational attainment and parents' occupation.

2.4 Research Instruments

The study utilized a researcher-made questionnaire-checklist as the primary instrument for data collection, consisting of two parts. The first part gathered the respondents' demographic profile, including sex, sibling position, number of children in the family, monthly family income, and parents' educational attainment and occupation. The second part assessed the level of 21st century skills in terms of information, media and technology skills, learning and innovation skills, communication skills, and life and career skills, with each domain containing 10 items for a total of 40 items. A 5-point Likert scale was used to interpret responses, ranging from "Least Skillful" to "Very Much Skillful." The academic performance of the respondents was obtained from their school records based on their average grades in the first and second quarters, interpreted using standard DepEd grading classifications from "Did Not Meet Expectations" to "Outstanding." The instrument underwent content validation by the thesis adviser, statistician, and other educational experts, whose feedback and suggestions were incorporated to ensure its validity and reliability prior to administration.

2.5 Data Collection

The researcher followed the Gantt Chart of Activities in the conduct of the study. This includes the formulation of the research problem up to the revision of the manuscript and submission of the final copy. After the validation of the instrument, permission to conduct the study was obtained from the Office of the Schools Division Superintendent. The questionnaire-checklist was administered to the respondents through the Google Survey form in compliance with the Data Privacy Act of 2012. After the retrieval, the data were encoded and processed utilizing the Statistical Package for Social Sciences (SPSS). Based from the interpreted data, summary of findings, conclusions and recommendation were formulated. After the oral defense, the manuscript was revised incorporating all the comments and suggestions of the oral examination committee. The study was also subjected to anti plagiarism test. After the final revision of the manuscript, hard bound copies were submitted to the office of the graduate studies program and other concerned offices.

2.6 Data Analysis

For the analysis and interpretation of data, several statistical tools were employed. Frequency, percentage, and rank distribution were used to describe the profile of the respondents in terms of the selected variables. The weighted mean was utilized to determine the level of 21st century skills of the Grade Six pupils across the different domains as perceived by themselves. To examine significant differences in the level of 21st century skills when grouped according to respondents' profile, One-Way Analysis of Variance (ANOVA) was applied. Meanwhile, the academic performance of the respondents, based on their average grades, was analyzed using frequency, mean, and standard deviation. Lastly, correlation analysis was used to determine if a significant relationship exists between the level of 21st century skills and the academic performance of the Grade Six pupils.

2.7 Ethical Considerations

The study ensured the protection of the rights and welfare of all respondents. Participation was voluntary, and respondents were informed about the purpose of the study. Confidentiality and anonymity of all information provided were strictly maintained, and data were used solely for research purposes. The researcher ensured that the respondents were treated with respect and that no harm, whether physical, emotional, or psychological, would result from their participation in the study.

3. Results and Discussion

3.1. Profile of the Respondents in Terms of Selected Variables

As shown in the table, in terms of sex, majority of them are females with 58.3 %. In terms of sibling position, 45.1% are first born child, 28.8% are second born child while 12.9% are third born child and the rest are fourth born child and above. As regard to the number of children in the family, 32.9% belong to families with 4 children and above, while 31.3% belong to families with 2 children, 25.1 % belong to families with 3 children and the rest are only one child. In terms of monthly family income, 42.3% have monthly family income below ₱ 15,000, 23.5 have monthly family income of ₱ 25,000 and above while 17.3 % have monthly family income of ₱ 20,000 - ₱ 24,999 and the rest have monthly family income of ₱ 15,000 - ₱ 19,999. In terms of parents' educational attainment, most of the parents are college undergraduates and college graduates. In terms of parents' occupation, most of the fathers are self-employed, government employees and private company employees. Meanwhile most of the mothers are employed in private companies and government agencies.

Table 1: Profile of the Respondents in Terms of the Selected Variables

Sex	F	%	Rank
Male	113	41.7	2
Female	186	58.3	1
Total	319	100.0	
Sibling Position	F	%	
Fourth and above	42	13.2	3

Third	41	12.9	4			
Second	92	28.8	2			
First	144	45.1	1			
Total	319	100.0				
Number of Children in the Family	F	%				
4 and above	105	32.9	1			
3	80	25.1	3			
2	100	31.3	2			
1	34	10.7	4			
Total	319	100.0				
Monthly Family Income	F	%				
₱ 25,000 and above	75	23.5	2			
₱ 20,000 - ₱ 24,999	55	17.3	3			
₱ 15,000 - ₱ 19,999	54	16.9	4			
below ₱ 15,000	135	42.3	1			
Total	319	100.0				
Parents' Educational Attainment	Father			Mother		
	f	%	R	f	%	R
College Graduate	82	25.7	2	85	26.7	2
College Undergraduate	94	29.5	1	97	30.4	1
High School Graduate	73	22.9	3	70	21.9	3
High School Undergraduate	39	12.2	4	30	9.4	4
Elementary Graduate	21	6.6	5	23	7.2	5
Elementary Undergraduate	10	3.1	6	14	4.4	6
Total	319	100.0		319	100.0	
Occupation	Father			Mother		
	f	%	R	f	%	R
Government Employee	72	22.6	2	78	24.4	2
Private Company Employee	67	21.0	3	83	26.0	1
OFW	19	6.0	6	20	6.3	5
Self Employed	83	26.0	1	67	21.0	3
Unemployed	34	10.6	5	58	18.2	4
Others	44	13.8	4	13	4.1	6
Total	319	100.0		319	100.0	

3.2. Level of 21st Century Skills of Grade Six Pupils as Perceived by Themselves With Respect to the Different Aspects

As gleaned from the table, all aspects are interpreted Much Skillful with a composite mean of 3.94. First and second in ranks are Career and Life Skills and Learning and Innovation Skills while third and fourth in ranks are Communication Skills and Information, Media and Technology Skills. It could be deduced from the results that pupils believe that they are much skillful in the different 21st century skills. This means that these skills are fostered through project-based learning, inquiry-based approaches, and the integration of technology in the classroom, moving away from rote memorization toward practical application and real-world problem-solving. These focus on developing adaptable, innovative, and tech-savvy learners prepared for a digital, globalized world. Findings imply that pupils are aware that 21st-century skills which comprise critical thinking, creativity, collaboration, communication, and digital literacy are vital in education to prepare students for a dynamic, technology-driven global economy. These skills foster adaptability, enabling students to solve complex real-world problems, navigate information efficiently, and succeed in future. This is in relation with the statements of Bertiz (2023) that twenty-first-century skills for Filipino learners, integrated into the DepEd K-12 and MATATAG curricula, focus on holistic development through the 4Cs (critical thinking, creativity, collaboration, communication) and 7Cs (including character, citizenship, and literacy). Key competencies include digital literacy, information literacy, problem-solving, and adaptability, aiming to prepare students for the workforce and daily life.

Table 2: Level of 21st Century Skills of Grade Six Pupils as Perceived by Themselves With Respect to the Different Aspects

Aspects	Overall Mean	Verbal Interpretation	Rank
Information, Media and Technology Skills	3.83	Much Skillful	4
Learning and Innovation Skills	3.97	Much Skillful	2
Communication Skills	3.92	Much Skillful	3
Life and Career Skills	4.04	Much Skillful	1
Composite Mean	3.94	Much Skillful	

3.3. Significant Difference on the Level of 21st Century Skills of Grade Six Pupils as Perceived by Themselves with Respect to the Different Aspects in Terms of Their Profile

The results of the F-test show that the probability values for sex, sibling position, number of children in the family, monthly family income, mothers' educational attainment, and parents' occupation are all greater than 0.05, indicating no significant difference in the level of 21st century skills among Grade Six pupils based on these variables. Hence, the null hypothesis for these factors is not rejected. However, in terms of fathers' educational attainment, all probability values are less than 0.05, leading to the rejection of the null hypothesis and indicating a significant difference. These findings suggest that fathers' educational attainment influences the development of pupils' 21st century skills, while other demographic factors do not. This implies that pupils may develop 21st century skills regardless of their personal and family characteristics, except for the educational level of their fathers, which plays a contributory role. These results are consistent with the study of Oral (2023), which found that most demographic variables did not significantly affect students' 21st century skills, although parental educational attainment—particularly the mother's—showed a significant influence on certain skill areas.

Table 3: Significant Difference on the Level of 21st Century Skills of Grade Six Pupils as Perceived by Themselves with Respect to the Different Aspects in Terms of Their Profile

Profile	f-value	p-value	Decision	Verbal Interpretation
Age				
Information, Media and Technology Skills	.529	.662	Accepted	Not Significant
Learning and Innovation Skills	1.158	.326	Accepted	Not Significant
Communication Skills	1.054	.369	Accepted	Not Significant
Life and Career Skills	.831	.477	Accepted	Not Significant
Sex				
Information, Media and Technology Skills	2.679	.070	Accepted	Not Significant
Learning and Innovation Skills	1.784	.170	Accepted	Not Significant
Communication Skills	1.352	.260	Accepted	Not Significant
Life and Career Skills	1.829	.162	Accepted	Not Significant
Sibling Position				
Information, Media and Technology Skills	.564	.727	Accepted	Not Significant
Learning and Innovation Skills	.952	.448	Accepted	Not Significant
Communication Skills	.521	.760	Accepted	Not Significant
Life and Career Skills	1.237	.291	Accepted	Not Significant
Number of Children in the Family				
Information, Media and Technology Skills	.667	.891	Accepted	Not Significant
Learning and Innovation Skills	.991	.213	Accepted	Not Significant
Communication Skills	.998	.231	Accepted	Not Significant
Life and Career Skills	.881	.981	Accepted	Not Significant
Monthly Family Income				
Information, Media and Technology Skills	.161	.958	Accepted	Not Significant
Learning and Innovation Skills	1.366	.246	Accepted	Not Significant
Communication Skills	.923	.450	Accepted	Not Significant
Life and Career Skills	.985	.416	Accepted	Not Significant

Father's Educational Attainment				
Information, Media and Technology Skills	2.676	.032	Rejected	Significant
Learning and Innovation Skills	2.053	.007	Rejected	Significant
Communication Skills	3.504	.028	Rejected	Significant
Life and Career Skills	1.417	.008	Rejected	Significant
Mother's Educational Attainment				
Information, Media and Technology Skills	1.637	.150	Accepted	Not Significant
Learning and Innovation Skills	.814	.540	Accepted	Not Significant
Communication Skills	.716	.612	Accepted	Not Significant
Life and Career Skills	.964	.440	Accepted	Not Significant
Father's Occupation				
Information, Media and Technology Skills	1.419	.217	Accepted	Not Significant
Learning and Innovation Skills	.635	.673	Accepted	Not Significant
Communication Skills	.715	.612	Accepted	Not Significant
Life and Career Skills	2.008	.077	Accepted	Not Significant
Mother's Occupation				
Information, Media and Technology Skills	1.557	.172	Accepted	Not Significant
Learning and Innovation Skills	1.209	.304	Accepted	Not Significant
Communication Skills	.788	.559	Accepted	Not Significant
Life and Career Skills	.662	.653	Accepted	Not Significant

3.4. Level of Academic Performance of Grade Six Pupils as Revealed in Their Average Grades in the First and Second Quarter

As shown in the table, out of 319 pupils, the majority demonstrated Very Satisfactory academic performance, with 51.1% attaining grades between 85–89. The overall mean average grade is 85.66, also interpreted as Very Satisfactory, indicating generally good academic performance among the respondents. No pupils scored below 75, or “Did Not Meet Expectations,” while the highest grade recorded was 94 and the lowest was 77. The standard deviation of 4.07 suggests that the pupils’ grades are moderately dispersed around the mean. These results imply that most pupils are performing well in their studies; however, some still need to improve by exerting more effort and developing effective study habits to enhance their academic outcomes. Academic performance may be influenced by various internal and external factors such as teacher quality, family support, socioeconomic status, personal motivation, teaching strategies, classroom environment, parental involvement, and access to learning resources. This finding is supported by Jones (2021), who emphasized that academic performance reflects the extent to which students achieve their learning goals and is measured through grades and assessments, playing a crucial role in their future educational and career opportunities.

Table 4: Level of Academic Performance of Grade Six Pupils as Revealed in Their Average Grades in the First and Second Quarter

Average Grade	Verbal Interpretation	Frequency	Percent	Rank
90 and above	Outstanding	52	16.3	3
85 – 89	Very Satisfactory	163	51.1	1
80 – 84	Satisfactory	92	28.8	2
75 – 79	Fairly Satisfactory	12	3.8	4
Below 75	Did Not Meet Expectations	-	-	-
Total		319	100.0	
Highest Rating		94		
Lowest Rating		77		
Mean		85.66 (VS)		
Std. Deviation		4.07143		

3.5. Significant Relationship Between the Perceived Level of 21st Century Skills and the Academic Performance of Grade Six Pupils

As reflected in the table, all domains of 21st century skills—information, media and technology; learning and innovation; communication; and life and career skills—show a significant relationship with academic performance ($p < 0.05$), with all correlation coefficients indicating a positive but weak relationship. These findings suggest that the level of 21st century skills of pupils is significantly associated with their academic performance, implying that pupils with higher levels of these skills tend to achieve better academic outcomes. This further indicates that enhancing 21st century skills contributes to improved academic success, as these competencies support critical thinking, problem-solving, and adaptability in learning. It also highlights the importance of integrating 21st century skills into the curriculum to help improve learners' performance in core subjects. This result aligns with the findings of Varona (2022), who reported that while students generally demonstrated high levels of 21st century skills and proficient academic performance, only communication skills showed a significant relationship with academic performance, suggesting that specific skill domains may serve as better predictors of academic outcomes.

Table 5: *Significant Relationship Between the Perceived Level of 21st Century Skills and the Academic Performance of Grade Six Pupils*

21 st Century Skills	r-value	p-value	Decision	Verbal Interpretation
Information, Media and Technology Skills	.226	.000	Rejected	Significant
Learning and Innovation Skills	.198	.000	Rejected	Significant
Communication Skills	.189	.001	Rejected	Significant
Life and Career Skills	.189	.001	Rejected	Significant

4. Conclusion & Recommendations

The study concludes that fathers' educational attainment plays a significant role in the development of Grade Six pupils' 21st century skills, while other demographic variables such as sex, sibling position, family size, monthly income, mothers' educational attainment, and parents' occupation do not significantly influence these skills. Furthermore, the findings reveal that pupils' academic performance is significantly associated with their level of 21st century skills, indicating that learners who possess higher levels of these competencies tend to achieve better academic outcomes. This highlights the importance of strengthening 21st century skills as a key factor in improving learners' overall academic success.

In light of these findings, it is recommended that school administrators continuously conduct seminars, trainings, and workshops for teachers to enhance the development of 21st century skills among learners. Schools should prioritize the integration of 21st century skill-building into basic education to improve both academic performance and future readiness. Teachers are encouraged to design learning activities that promote critical thinking, digital literacy, collaboration, and adaptability, while pupils should be motivated through more challenging and engaging activities. The implementation of the proposed action plan is also recommended, along with the conduct of further studies considering other variables to expand and validate the findings..

Compliance with ethical standards

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